

Arborist Report & Tree Protection Plan

December 2020



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Introduction

Overview

The property owners are planning to add an ADU (Accessory Dwelling Unit) to the property at 1051 NE 96th Street, Seattle, WA. To comply with the municipal codes of the City of Seattle, a comprehensive Tree Preservation Plan needs to be submitted and approved before construction. The client contracted Davey Resource Group, Inc. (DRG) to provide an arborist evaluation and report on the health, size, and location of the trees as well as identify tree protection and retention measures for submittal and approval by the City before any land disturbance.

Using a pen tablet computer, the arborist visited each tree on the site which was visually assessed, and the required tree data was collected within a GIS database. Following data collection, specific tree preservation plan elements were calculated that identified each tree's drip line and Tree Protection Zone (TPZ) to better ensure survivability during the planned development. The following details are provided in alignment with the information required by the City of Seattle Municipal Code ([SMC 25.11](#)):

- A methodology section describing the arboricultural inventory process and rationale used to rate each tree.
- A description of the tree protection zone (TPZ) and how it was calculated.
- Tree Protection Zone (TPZ) standards and implementation for all trees recommended to be retained.
- Inventory data table(s) for each tree six (6") inches or greater in DBH and corresponding identification numbers that will identify each tree on the provided map.
- Tree care recommendations for any and all work to take place in the TPZ of all retained trees.
- Maps detailing all tree locations, dripline, and tag number.

Limits of the Assignment

Many factors can limit specific and accurate data when performing evaluations of trees, their conditions, and values. The determinations and recommendations presented here are based on current data and conditions that existed at the time of the evaluation and cannot be a predictor of the ultimate outcomes for the trees. A visual inspection was used to develop the findings, conclusions, and recommendations found in this report. Values were assigned to grade the attributes of the trees, including structure and canopy health, and to obtain an overall condition rating. No physical inspection of the upper canopy, sounding, root crown excavation, resistograph, or other technologies were used in the evaluation of the trees.

Methods

Data was collected on December 17th, 2020, by an ISA Certified Arborist (Travis West PD-2444A). The results will be used to determine the Tree Protection Zone (TPZ) and any other tree protection measures required during construction. Location and dripline of all trees six inches or greater in diameter at breast height (4.5 ft. above grade) were surveyed. The DBH of those trees with multiple stems was determined by taking the square root of the sum of the squared DBH for each stem, per City guidelines.

The following attributes were collected for each site:

Tree ID Number: A tree ID number was assigned to each tree.

Location and Unique ID: An X and Y coordinate was generated for each tree site.

Species: Trees were identified by genus and species, cultivar if evident, and by common name.

Diameter at Breast Height (DBH): Trunk diameter was recorded to the nearest inch at 4.5 feet (breast height) above grade except where noted. When limbs or deformities occurred at breast height, the measurement was taken below 4.5 ft. For multi-stemmed trees, the Diameter was determined by taking the square root of the sum of the squared DBH for each stem.

Height: Tree Height estimated to the nearest <5ft.

Avg. Crown Radius: Average drip line distance was measured.

Condition: The general condition of each tree was recorded in one of the following categories adapted from the rating system established by the International Society of Arboriculture: Excellent, Good, Fair, Poor, Very Poor, Critical, Dying, or Dead.

Tree Preservation Priority: To capture the priority for the preservation of an individual tree as it relates to planning for development projects, DRG utilized a rating scale of one to four, with one being the highest priority for protection and four indicating the least concern. The condition rating of an individual tree is an important component of the priority rating, but several other variables are factored in: species desirability, species longevity, species sensitivity to root loss and construction impacts, uniqueness, and aesthetics both of the tree itself and its relation to the site. It is important to note that these are qualitative ratings based solely on the site, individual tree, and existing conditions at the time of the inventory. Proposed development and construction plans are not considered when assigning ratings.

Observations

Site Observations

The project site was adjacent to the alley behind 1051 NE 96th Street in Seattle, Washington. The project site was a flat plane covered with manicured grass and had an outbuilding in between the trees. The trees on the project site were concentrated in the southwest corner of the client's property. One tree on the neighbor's property was overhanging the fence and was included in this tree inventory. Access to the site was made by parking on the road adjacent to the property and walking to the trees in the backyard.

Tree Observations

A total of four (4) trees were inventoried at the site. One (1) tree was on the adjacent property with a canopy that was overhanging the subject property. There was one (1) exceptional trees, **Tree ID# 4**. Of the four (4) trees found in the inventoried area, the two (2) species found were Black locust (*Robinia pseudoacacia*) with three (3) specimens and Deodar cedar (*Cedrus deodara*) with one (1) specimen.

Tree condition is important to evaluate before construction because healthy trees can better withstand construction impacts and partial root loss. Besides, it may not be of value to try to preserve trees in poor condition through construction when removal is a better option for the aesthetic value and health of the tree population as a whole. Of the four (4) site trees, four (4) were in fair condition.

The primary focus of this report was to inventory all the trees on the site six (6) inches or greater in diameter at breast height (4.5' above grade). Each tree was assigned a tree protection priority as part of the inventory process. The recommended priority is solely based on tree health, structure, and species at the time of inventory. No consideration for development impacts was used in this priority determination. The tree protection priority was assigned one through four. **Priority 1:** Highest priority for protection (i.e. particularly good condition, unique tree and/or should be protected at all reasonable cost); **Priority 2:** A tree well worth protecting though not uniquely valuable; **Priority 3:** Health or structure not worth any special protection measures. **Priority 4:** Trees that should be removed under most any circumstances (major structural defects, unhealthy, dying, or particularly high-risk situations, etc.).

Table 1. Tree Preservation Priority

Preservation Priority	Count
1	1
2	3
3	0
4	0
Total	4

Analysis & Recommendations

Successful tree preservation efforts begin in the planning and design phase. To select the appropriate trees for preservation and then incorporate those trees into future development plans, site managers and designers need detailed information on the health and status of the existing trees. This report satisfies the conditions of the critical first step in the preservation process: a tree inventory, assessment, and analysis conducted by a qualified professional. The resulting findings guide the beginning stages of the preservation process.

Condition rating and preservation priority rating help nominate potential candidates for preservation. Final selections for preservation are largely determined by the percentage of Tree Protection Zone (TPZ) impacted and whether or not the Interior Tree Protection Zone (ITPZ) is impacted. Development plans should ensure that no impact or root damage occurs within the ITPZ, and plans should take into consideration the significant reduction in the likelihood of tree survival when more than 33% of the TPZ is impacted ([SMC 25.11.050B](#)). **Tree #4 is considered exceptional** according to the City. For this tree, in particular, the dripline of the tree (TPZ) extends, on average, twenty-five feet from the trunk of the tree. The ITPZ (one half of the radius of the TPZ) extends for twelve and a half feet from the trunk of the tree. The TPZ has a total area of 1,962.5 ft.². The outer half of the TPZ was calculated to be 1,431.9 ft². This means that the maximum incursion into the outer dripline area is 490.6 ft².

Exploratory excavation within the tree protection zone by a certified arborist using an air spade should be completed if the proposed construction extends into the TPZ. If the on-site arborist determines minor root pruning is necessary, clean pruning cuts should be made to those roots that extend into the disturbed area. Root pruning and disturbance in the root zone of the tree is limited to one-third of the area within the outer half of the area within the dripline.

Removing trees greater than 24 inches in diameter, significant or not, need to be replaced ([SMC 25.11.090](#)) by trees that have roughly the same canopy (or more) at maturity than the removed trees. Removing the three Black locusts on the property will need to have replacement trees planted. Local natives are best suited for the environment of Seattle. Common choices for replacing medium-sized trees include; Western red cedar (*Thuja plicata*), Incense cedar (*Cupressus calocedrus*), or Quaking aspen (*Populus tremuloides*). Other medium-sized trees may be used, the preceding list is only a suggestion. When choosing a place to replant a tree, take into consideration the expected size of the tree at maturity. Planting close to fences or structures could cause future conflicts.

The following recommendations should be completed before development activities:

- **Remove Tree ID#’s 1, 2, and 3** to make way for the new construction.
- **Prune Tree ID# 4** to clear access for construction activities following [ANSI 300](#) pruning standards.
- **Mulch** the root zones of all significant and exceptional trees to be retained during construction with 3” of organic mulch or arborist wood chips to help maintain moisture, avoid soil compaction, and avoid soil erosion.
- **Install** tree protection fencing for all remaining significant and exceptional trees on the site and all those trees with canopies that extend onto the subject property. Tree protection fencing may be

installed at the edge of the impermeable or paved surfaces for those trees whose drip lines extend over the edge.

During construction, these recommendations will help to ensure that the retained trees survive the construction phase:

- **Retain a Certified Arborist** on-site to monitor activities and assess impacts to trees. The arborist can make as-needed recommendations to improve tree preservation activities throughout the development process. This is particularly important to make a timely response when a preserved tree is accidentally damaged or otherwise impacted during development.
- **Signage** instructing site workers not to enter Tree Protection Zones should be posted throughout the job site. Signage should be posted in both English and Spanish as well as any other language as deemed necessary by site managers.
- **Discuss tree protection** regularly at required staff meetings. Reiterate the importance of respecting the Tree Protection Zone as critical to the safety of staff working on-site and the success of tree preservation efforts.
- Strictly **enforce** the Tree Protection Zones as “No-Go” zones. No activity, human or machinery, should breach the established TPZ.
- **Root prune** where any grading or trenching occurs within a Critical Root Zone.
- Ensure the TPZ receives **weekly watering** equivalent to the amount of average natural rainfall for the specific development site. When the amount of natural rainfall received is less than the historical average, manual watering methods should be employed. The on-site Certified Arborist can make determinations when additional manual watering is necessary.
- Where possible, **do not raise or lower the soil grade within a Tree Protection Zone**. A tree relies upon small, non-woody roots called feeder roots for the absorption of water and nutrients. These roots predominantly reside in the upper several inches of soil, just below grade. Lowering the soil grade, even just a few inches, will sever these feeder roots and compromise tree health. Raising the soil above the existing grade, such as through the addition of fill soil, buries feeder roots too deep and restricts feeder root access to water and oxygen.

Successful tree preservation efforts continue after the construction phase has ended. The following describes steps to ensure retained tree survival:

- The preserved trees should be **re-inspected** for signs of construction impact that may have gone undetected during construction and mitigation measures assigned accordingly.
- Any soil compaction that occurred within a TPZ should be remedied with **aeration**.
- The preserved trees should be placed on a **seasonal care plan** for two years that includes both monitoring and routine soil amendments to stimulate new root growth.
- Annual monitoring should continue for several years, as the effects of construction may take anywhere from 3 to 7 years to become visibly apparent.

Tree Protection Zone & Timing

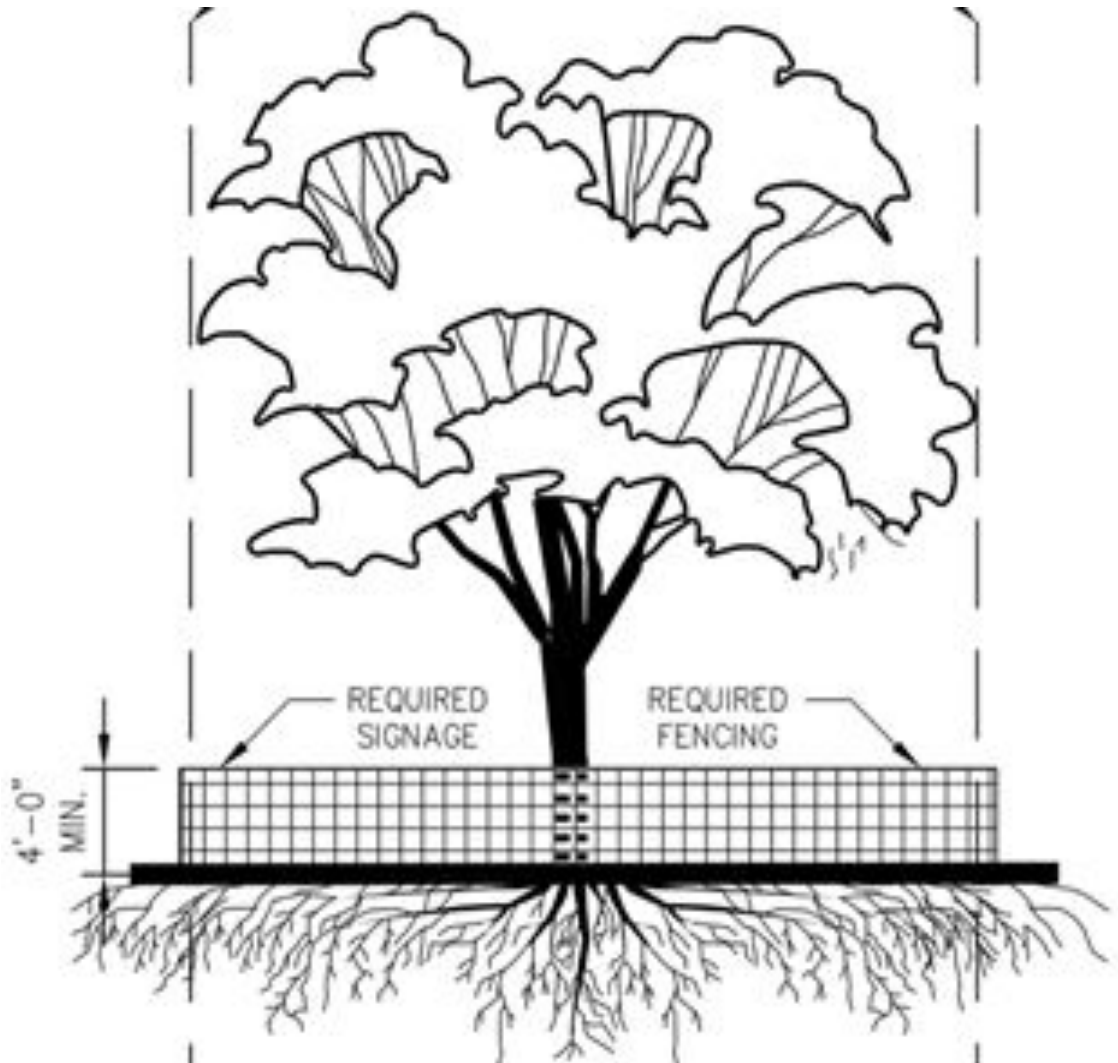
To ensure the long-term viability of trees and stands identified for protection, construction activities shall comply with minimum required tree protection through an established Tree Protection Zone for those trees determined to remain on the site. The Tree Protection Zone (TPZ) for each tree can be measured as the distance from the trunk to the edge of the tree canopy, referred to as the tree drip line. The Inner Tree Protection Zone (ITPZ) has a radius of half of the distance from the tree trunk to the drip line of the tree. The TPZ represents the typical minimum rooting area required for tree health and survival. With approval from the Director of the Seattle Department of Construction and Inspections, the outer TPZ for trees with a DBH greater than twenty-four inches may be reduced. This reduction cannot exceed 33% of the outer TPZ and should be followed with basic mitigation/stress reduction measures.

Exploratory soil excavation should be completed for any tree to be retained to find and properly prune any roots that extend into the construction disturbance limits. Accurate measurements of the construction footprint should be completed and clearly marked on-site before any tree work.

Tree Protection Zone (TPZ) fencing shall delineate the protected area of all retained trees at the site. The TPZ will be equal to the outer edge of the dripline. Access into the TPZ shall not be allowed unless determined to be necessary by and under the supervision of the site architect or arborist.

- Where proper excavation and root pruning take place or existing hardscape exists, the TPZ fencing may be installed closer to the trunk and will be determined by the site arborist at the time of installation.
- TPZ shall be a minimum of 4 feet high, constructed of chain link or polyethylene laminar safety fencing or similar material subject to approval by an ISA Certified Arborist.
- "Tree Protection Area - Keep Out" or similar signs shall accompany the TPZ fencing at regular intervals.
- TPZs shall be constructed in such a fashion as to not be easily moved or dismantled.
- TPZs shall remain in place for the entirety of the project and only be removed, temporarily or otherwise, by an ISA Certified Arborist.

Figure 1. An example of a Tree Protection Zone barrier. Contact information of the site manager or consulting arborist should also be included on the sign. TPZ shall be installed 5 ft. outside the dripline of the tree or greater where applicable.



Concluding Remarks

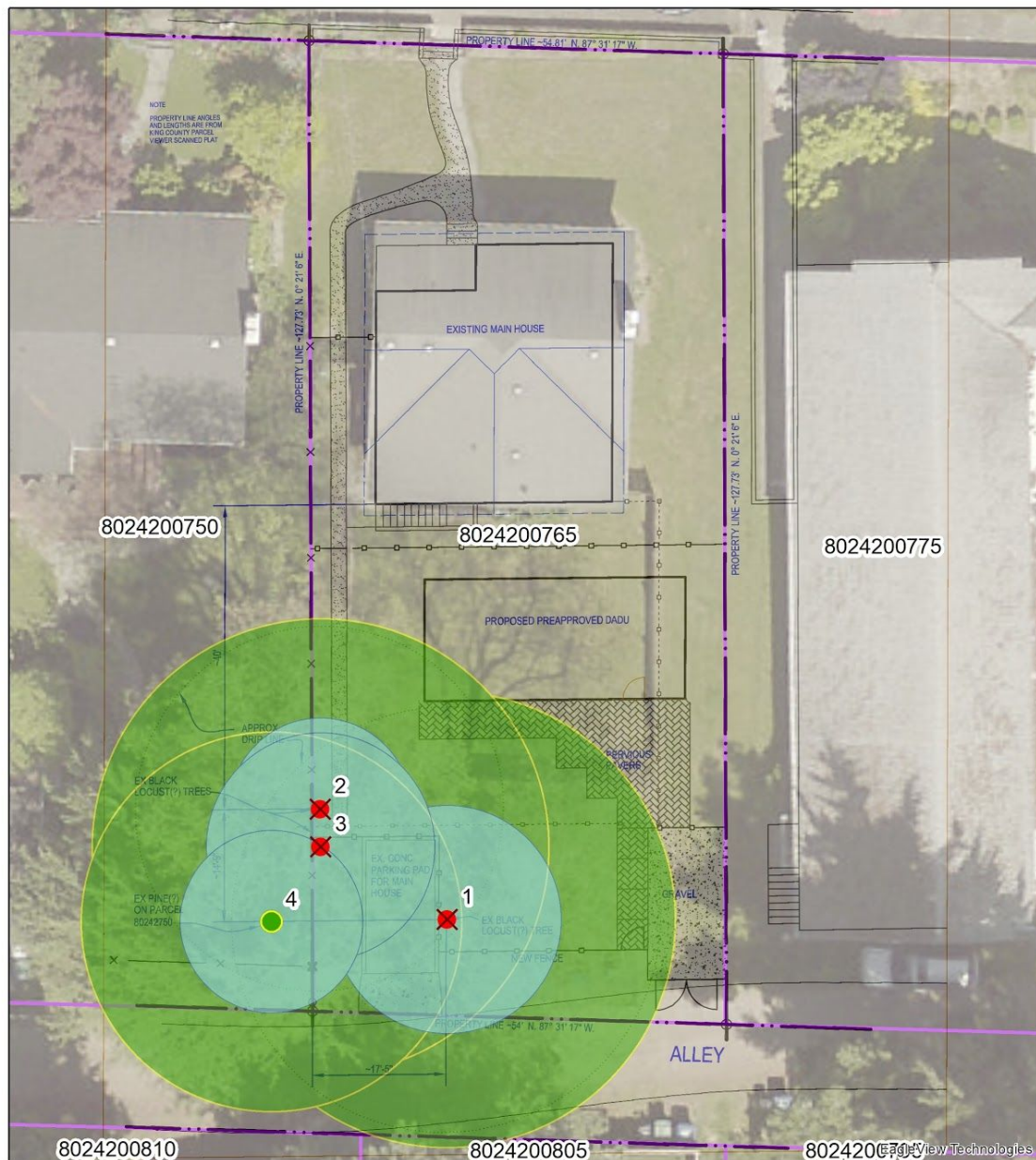
This report, along with the tree inventory, is the first step in preserving the health, function, and value of the trees on the site during and after development. Trees and green spaces provide benefits and add value to residential properties. Tree preservation starts with a basic understanding of the health and structure of the trees on the site. With proper care and protection, the remaining trees can continue to thrive. Tree protection guidelines and strategies should be shared with contractors and employers before any disturbance at the site.

The suitability of a tree for preservation is a qualitative process based on the interaction of a variety of influencing factors. A tree inventory and arborist report provide a snapshot in time of each tree assessed across many of the most important observable factors relative to preservation. Healthy, vigorous trees better tolerate impacts from construction and more readily adapt to the new site conditions that exist after completion of development. Additionally, tolerance to impact from construction activities varies across species and sites. The percentage impact on the tree protection zone also greatly influences the suitability of a particular tree for preservation.

Successful tree preservation requires a team effort to find the right balance and select the appropriate trees. Using the findings of this report as a guiding foundation, planners are equipped to design, prepare, and implement a tree preservation plan tailored to achieving the optimal outcome.

Appendix A: Maps

Map A1. Site map showing tree ID numbers, condition, significance, average canopy radius (TPZ), and ITPZ.



- ✖ Remove - Impacted
- Retain
- ITPZ
- Avg Canopy



Appendix B. Inventory Table

Table B1. A complete inventory table is available in a spreadsheet format if requested.

ID	Species	DBH (in)	Height (ft)	Average Canopy Radius (ft)	Condition	Grow space	Maintenance Task	Maintenance Detail	Preservation Priority	Owner
1	Black locust (<i>Robinia pseudoacacia</i>)	29	70	30	Fair	Lawn	No Priority	None	2	Client
2	Black locust (<i>Robinia pseudoacacia</i>)	25	60	25	Fair	Lawn	No Priority	None	2	Client
3	Black locust (<i>Robinia pseudoacacia</i>)	25	65	30	Fair	Lawn	No Priority	None	2	Client
4	Deodar cedar (<i>Cedrus deodara</i>)	36	70	25	Fair	Lawn	Priority 2 Prune	Structural Prune	1	Neighbor